What is claimed is:

1. A method for predicting process results on the basis of operation data and process result data of a processing apparatus while a plurality of objects are processed in a processing chamber of the processing apparatus, comprising the steps of:

(a) collecting operation data and process result data obtained at the time of processing each of the objects;

(b) performing a multivariate analysis on the basis of the collected operation data and process result data to obtain a first correlation between the operation data and the process result data;

(c) predicting process results using operation data, obtained when objects other than the objects used to obtain the first correlation are processed, on the basis of the first correlation;

(d) setting weighting coefficients for the respective operation data used at the step (b) on the basis of the predicted process results at the step (c);

(e) obtaining weighted operation data by multiplying the operation data by the respective weighting coefficients corresponding thereto, and performing a multivariate analysis on the basis of the weighted operation data and the process result data to obtain a second correlation

between the weighted operation data and the process result data; and

(f) predicting process results using operation data, obtained when objects other than the objects used to obtain the second correlation are processed, on the basis of the second correlation.

2. The method of claim 1, wherein the weighting coefficient setting step (d) comprises:

comparing actual process results with the predicted process results in the first prediction step (c), which are obtained at the time of processing each of the objects;

obtaining a first contribution of the operation data, which indicates that the predicted process results of the first prediction deviate above the actual process results, and a second contribution of the operation data, which indicates that the predicted process results of the first prediction deviate below the actual process results; and

setting the weighting coefficients on the basis of a difference between the first and the second contributions.

3. The method of claim 2, wherein the first contribution is a contribution of operation data, obtained when the predicted process results of the first prediction deviates above the actual process results, with respect to reference

operation data; and the second contribution is a contribution of operation data, obtained when the predicted process results of the first prediction deviate below the actual process results, with respect to the reference operation data.

4. The method of claim 2, wherein, as the difference between the first and second contributions is larger, a lower weighting coefficient is set, while as the difference is smaller, a higher weighting coefficient is set.

5. The method of claim 1, wherein the weighting coefficient setting step (d) comprises:

obtaining plural sets of weighting coefficients, each of the sets being based on different references with respect to operation data of the same object;

performing a multivariate analysis with respect to weighted operation data obtained for each set of weighting coefficients to predict process results; and

setting a set of weighting coefficient obtained when the predicted process results are closest to actual process results.

6. The method of claim 1, wherein in the weighting coefficient setting step (d), each of the weighting

coefficients is set to "0" or "1".

7. The method of claim 1, wherein the operation data are optical data.

8. The method of claim 1, wherein the process result data are process dimensions of an object to be processed.

9. The method of claim 1, wherein the multivariate analysis is performed by employing a Partial Least Squares (PLS) method.

10. An apparatus for predicting process results on the basis of operation data and process result data of a processing apparatus while a plurality of objects are processed in a processing chamber of the processing apparatus, comprising:

a data collection unit for collecting operation data and process result data obtained at the time of processing each of the objects;

a first analysis unit for performing a multivariate analysis on the basis of the collected operation data and process result data and obtaining a first correlation between the operation data and the process result data;

a first prediction unit for predicting process results using operation data, obtained when objects other

than the objects used to obtain the first correlation are processed, on the basis of the first correlation;

a weighting coefficient setting unit for setting weighting coefficients for the respective operation data used by the first analysis unit on the basis of the predicted process results;

a second analysis unit for obtaining weighted operation data by multiplying the operation data by the respective weighting coefficients corresponding thereto, and performing a multivariate analysis on the basis of the weighted operation data and the process result data to obtain a second correlation between the weighted operation data and the process result data; and

a second prediction unit for predicting process results using operation data, obtained when objects other than the objects used to obtain the second correlation are processed, on the basis of the second correlation.

11. The apparatus of claim 10, wherein the weighting coefficient setting unit compares actual process results with the predicted process results by the first prediction unit, which are obtained at the time of processing each of the objects; obtains a first contribution of the operation data, which indicates that the predicted process results of the first prediction deviate above the actual process

results, and a second contribution of the operation data, which indicates that the predicted process results of the first prediction deviate below the actual process results; and sets the weighting coefficients on the basis of a difference between the first and the second contributions.

12. The apparatus of claim 11, wherein the first contribution is a contribution of operation data, obtained when the predicted process results of the first prediction deviates above the actual process results, with respect to reference operation data; and the second contribution is a contribution of operation data, obtained when the predicted process results of the first prediction deviate below the actual process results, with respect to the reference operation data.

13. The apparatus of claim 11, wherein, as the difference between the first and second contributions is larger, a lower weighting coefficient is set, while as the difference is smaller, a higher weighting coefficient is set.

14. The apparatus of claim 10, wherein the weighting coefficient setting unit obtains plural sets of weighting coefficients, each of the sets being based on different references with respect to operation data of the same

object; performs a multivariate analysis with respect to weighted operation data obtained for each set of weighting coefficients to predict process results; and sets a set of weighting coefficient obtained when the predicted process results are closest to actual process results.

15. The apparatus of claim 10, wherein the weighting coefficient setting unit sets each of the weighting coefficients as "0" or "1".

16. The apparatus of claim 10, wherein the operation data are optical data.

17. The apparatus of claim 10, wherein the process result data are process dimensions of an object to be processed.

18. The apparatus of claim 10, wherein the multivariate analysis is performed by employing a Partial Least Squares (PLS) method.